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ABSTRACT

"Writeability" is concerned with helping writers and editors produce materials on easier readability levels. A major input of most readability formulas is vocabulary difficulty. One way to increase readability is to use simple vocabulary or shorter words since word frequency studies show that more common words are shorter. The other major input is syntactic complexity or average sentence length. Historically, sentences are getting shorter, although just shortening sentences is not the whole answer. Punctuation is helpful to the reader most of the time, but commas, colons, and semicolons are frequently overused. Personal pronouns communicate more effectively than does the passive sentence form, but misuse of pronoun referents can cause problems. Paragraphs should also be reasonably short, and one effective type of organization is the statement-example-restatement form. Subheads, and signal words that indicate sequence, examples, or opposing ideas can contribute to understanding. Writing can also be improved by cutting out words with low imageability. Readability formulas will never be able to judge the individual reader's motivation to read a particular bit of writing, but there is ample evidence that proper writing or rewriting can keep the readability scores of most materials lower than is commonly supposed. (A writeability checklist is included.) (HTH)

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WRITEABILITY

Edward Fry

Readability formulas are concerned with judging the difficulty levels of writing. Frequently materials such as text books, consumer contracts, and a wide variety of reading matter from recreational to functional are found too difficult or unreadable for the intended audience. Writeability is concerned with writing, rewriting, or editing to get those materials down to the desired readability level.

Writeability is concerned with helping writers and editors produce materials on easier readability levels without cheating. Cheating is defined as trying to beat the formulas by artificially chopping sentences in half and selecting just any short word to replace a long word. You can cheat on an IQ test to get a higher score but you won't have changed your intelligence. Likewise you can cheat or artificially doctor writing to get a lower readability formula score but you might not have changed the true readability much and in fact you may have made it worse.

True readability is the goal of most authors. They want to communicate ideas to the reader.

Proofs of readability are legion in educational and psychological research literature. Increased readability can be demonstrated in many ways such as higher scores on comprehension questions, ability to fill in more blanks in a cloze passage, less oral reading errors, a tendency to read longer, more mature eye movements, and subjective judgement of the reader.

The concept of readability and more specifically the use of

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readability formulas has never been more popular. They have had a profound influence on the textbook publishing industry in the past ten years. There is hardly an editor or salesman who cannot tell you the readability score of their materials. The influence on technical materials has been equally great and readability formulas have influenced the writing of such diverse products as army maintenance manuals, insurance policies and income tax booklets.

Five states, New York, New Jersey, Hawaii, Connecticut and Minnesota have passed Plain Language Laws over the ineffectual ^{to}prostatations of some members of the bar. At least two more states, California and Michigan, are actively considering joining the group. Plain Language laws differ from state to state but basically the goal is to simplify all types of consumer contracts such as rent agreements, money lending forms, and the fine print on insurance policies. The New Jersey law states that:

"a consumer contract shall be simple, clear, understandable and easily readable".

In 1978, President Carter sent Executive Order 12044 on plain language to all government departments and many states have similar movements.

Another development of importance is the basing of reading tests upon a readability formula. The Degrees of Power now taken by every student in the state of New York and used in some other areas such as Boston and parts of Connecticut, is not a norm based (standardized) test. Rather

it yields a readability score. In other words it tells the teacher or administrator what books the students can read. It does not compare one student with another, though it could be used in that manner.

The basic idea behind readability has always been to help writers, editors, teachers, and librarians to match the difficulty of the written materials with the reading ability of the student. A good match improves communication and learning.

This article will discuss some of the ways readability of written material can truly be increased, or to state it operationally, "how readability formula scores can be lowered without cheating". I call this process writeability.

Vocabulary

A major input of most readability formulas is vocabulary difficulty. Obviously then one way to lower readability scores is to use simpler vocabulary.

Many readability formulas use word length as measured by number of syllables or letters in an average word. These techniques are based on word frequency studies which show that more common words are shorter.

Writers and editors can use word frequency lists as guides. One of the largest and most scholarly of these is the American Heritage or Carrol list which ranks 87,000 words found in frequency counts of 5 million running words. It has largely replaced the older but still valuable Thorndike Lorge lists. However most writers will find these lists too expensive and cumbersome. A shorter and more useable list is the 3000 Instant Words (Sakiey and Fry, 1979) which lists in rank order an alphabetical order the 3000

most used words in English. The commonness of the variant forms (adding s, ed, ness, etc.) is also given for each word. Even shorter word lists like the Dolch 220 Basic Sight Word of the first 300 Instant Words can be very useful to writers of primary material.

The first rule for writers then is to use more common (high frequency) words. For example, don't prolong a process" - "keep it short". A little hint that might be helpful is that often words of Latin and Greek origin can be substituted for more common words. For example, "proceed" often means "go", "secure" often means "safe". Words beginning with pre, dis, multi, etc. can often be substituted for easier words.

Much of what is commonly called jargon or gobeltygood is simply someone using words which are larger than necessary in order to sound pretentious or self-imposing. Military jargon is legendary. Private Smith is told to "report to" the captains office. What they mean is that he should "come to" the captains office.

Note that in these examples a readability formula would quickly finds that proceed and report was longer or less frequent than go.

Readability formula makers are just as aware as anyone else that there are plenty of times when the longer word is necessary and should be used. Longer words can add precision, clarity and grade to an authors writing. But use too many and you will get a truly higher readability score. The result is you will cut down the comprehensibility of your writing.

A serious problem on word selection was presented to me by a group of science textbook editors on the problem of vocabulary

selection. For example, they wanted to use the word "temperature" in a primary book and a word like "osmosis" in an upper level book. They argued and rightly so that that it is at best awkward not to use the correct word and furthermore the student should learn to read those words. I heartily agreed and published a modification of my *readability* formula in Publishers Weekly (1979). Since that is not a widely read magazine by educators I will restate the modification here: Any term presumed to be new and difficult for the readers should be:

1. Defined or used in context the first time a new word appears in such a way that its meaning is apparent and,
2. Be followed by the phonetic spelling or syllabification of the word as can be found in any commonly used dictionary for the next three times it appears. For example: syllabify (syl lab i fy) or (si lab' i fī).
3. The new word can be counted as a 2 syllable word regardless of its length.
4. These new words should also appear in the teachers guide, at the beginning or end of a chapter in the students book as a new word list, and possibly in a glossary.

In brief, what the author is doing is teaching the word to the reader in a very helpful and meaningful way. I'm all in favor of vocabulary improvement. I'm just opposed to bad communication which occurs when the author uses words that the reader does not know.

There is another very important type of word list and that is a list based on words known by students at given grade levels. The most impressive of these is the Living Word Vocabulary (Dale and O'Rourke, 1976) which lists meanings of words known at different

grade levels. For example, the word run has many meanings. At grade 4 students know it as a baseball word, at grade 6 the way a political candidate uses it, at grade 8 to manage a business, at grade 12 as a sudden demand. No present readability formula takes this degree of complexity into account though some formulas such as the Dale-Chall do count as unfamiliar or difficult words those words not known by a majority of 4th graders. But as a writers guide, meaning lists are valuable.

Sentences

The other major input to most readability formulas is a measure of syntactic complexity. To put it briefly they measure average sentence length. They could measure grammatical constructions such as prepositional phrases or subjunctive clauses but most of these measures correlate highly with average sentence length. Hence the obvious instruction to authors is keep your sentences short - on the average.

Nothing could be more boring reading than a long series of short choppy sentences. But on the other hand, nothing makes writing less understandable than very long sentences. You have to have variety in order to express yourself properly and to interest your reader. Short sentences hit hard. Longer sentences can have a languid flow or a subtle suggestion that the idea simply cannot be expressed without some reservations and qualifications.

Historically sentences are getting shorter. Rudolph Flesch (1974) reports that Elizabethan sentences averaged 45 words while Victorian sentences averaged 29 words. In 1949 he found that popular magazines such as Time and Readers Digest had sentences that averaged 18 words and in 1974 they averaged 15 to 17 words.

He estimates that there was a 10% shortening in sentence length in 25 years, a rather hefty shrinkage.

However just shortening sentences is not the whole answer. Critics of readability formulas have pointed out that sometimes longer sentences communicate better. For example, if you have a sentence like

Farmer Brown didn't go to town because the roads were icy. and you shortened it by having two simple sentences.

Farmer Brown didn't go to town. The roads were icy.

Then you ask a student a comprehension question, "Why didn't Farmer Brown go to town? You might find that more of them got the answer correct after reading the longer sentence. This is why readability formulas say that "on the average" sentences should be shorter for better communication. They do not say that every sentence should be short.

Incidentally, readability formulas were not meant as writers guides. They were meant to judge the difficulty of a prose passage after the material had been written. This article is a writers guide.

There are two important kinds of sentence complexity that readability formulas cannot pick up. The first is what I have referred to as the Kernel^e Distance Theory. Briefly it states that splitting up the subject: verb-object (the kernel of the sentence) with "distance" (extra words) causes poor readability. An example of a split kernel would be: "Children, if they don't wish to get colds; should wear mittens". An unsplit kernel would read "Children should wear mittens if they don't wish to get colds". This theory also states that distance in front of the kernel is

worse than distance at the end of the kernel. For example, "If they don't wish to get colds, children should wear mittens." Note that all three sentences have the same vocabulary and the same sentence length and hence would get the same readability score but research has shown that split kernel sentences yield worse communication. Other writers would call kernel splitting "embedding".

A good example of embedding are the "fat" sentences used by the legal profession. Basically they have too many qualifying, embedded clauses. Another problem with legal and bureaucratic writers is that they forget who the audience is. They often write to avoid law suits not^{to} communicate with the reader.

A second factor, and one often mentioned in rhetoric books, is that active sentences communicate better than passive sentences. Don't say that "The test was taken by the students" say "The students took the test". Sometimes, as in this case, active sentence is also shorter. Klare (1980) gives a good suggestion that writers should use active verbs rather than nominalizations (verbs made into nouns). For example, the verb suppose could inappropriately be nominalized to the supposition that.

Punctuation is helpful to the reader most of the time, however a notable exception is the over use of commas. Sprinkling too many commas in a sentence means that the flow is too choppy. It may also indicate that you have a heavily embedded sentence or one that is too long. So too many commas warn the writer or the editor that something may be amiss. Another warning sign is the use of semicolons or colons in a sentence. Modern writing uses far less of them and frequently they too signal an editor that perhaps there should be two sentences here instead of one.

Paragraphs

Paragraphs, like sentences, shouldn't be too long. On the average they should be short. Paragraphs are intended to guide the reader into seeing units of thought, gestualts, or schema. Whatever you want to call them, they should have some kind of psychological unity. When I read a masters thesis and come across a paragraph lasting for a page and a half I usually find that there is something wrong with the students thinking or communication skills.

The old English teachers admonition about writing a well structured paragraph with main idea, supporting details and conclusion is largely a myth. It might, repeat might, help to train neophyte writers, but it simply isn't followed by professional writers. Take a look at Hemmingway or any newspaper and you will see plenty of short, even one sentence paragraphs. Now there are times when you might want to use one of these "well structured" paragraphs but don't be bound by some ideal of paragraph structure.

Short paragraphs have punch.

Another factor related to paragraphing is the use of lists. They are particularly useful in technical writing or in directions. Lining up a list of terms or objects is often far better than stringing them all together in a sentence separated by commas. Here is another instance of too many commas being a danger signal.

Rules numbered 1, 2, 3 are easier to read when indented and lined up and they are certainly easier to refer back to.

Organization

Selecting the proper organization for an article or a chapter of a story is part of the art of being a writer. Some subject

matters lend themselves more to one form of organization than another. For example, history often relies heavily on a chronological organization but very effective histories have been written which are theme or problem centered.

One type of organization that I have found to be effective in expository writing is the SER sequence. It stands for Statement-Example-Restatement. It is a little like the southern preacher who reported that the organization for his sermon was "I tells 'em what I' gona tell 'em. I tells 'em. And I tells 'em what I told 'em." This includes the important element of repetition but it also includes giving concrete examples and restating the principle in another way.

Subheads can make an important contribution to understanding the article and in telling the reader what organizational pattern the writer is using. Good subheads can act a little like Ausabel's advanced organizers or Rothkopf interspersed questions. Subheads also help greatly the overview and review process recommended in the SQ3R and other study skill techniques. They are used by some skilled readers or improve comprehension or retention of the material.

Clearly written material also uses many signal words to indicate the authors organization to the reader. Signal words can indicate sequence and rank order such as "first second etc., next, last, in conclusion." They can indicate a reverse idea is coming up (however, but, on the other hand). They can indicate that the author is not absolutely certain (maybe, if, allegedly, might). Other words signal that an example is coming up (for example) or that ideas might be paralleled or a choice is given (or).

Personal Words

No less an august authority than the American Psychological Association condones and even at times encourages the use of personal pronouns in scholarly writing.

It is a great myth among technical writers and scientists that human beings never do anything. For example, many a report concludes that "It was found that ..." Who in the world is it? Chances are that it is none other than the author who prefers a literary castration of himself rather than using a personal pronoun because he thinks it is more scholarly. What he often doesn't know, even if he is a psychologist or linguist, is that not using personal pronouns communicates less well and borders on academic dishonesty. What really happened was that "I found that ..." so why not say so. Stand up and take personal credit or blame and be a real person to your reader.

For those who need more convincing, here is a direct quotation from the APA Publications Manual:

An experienced writer can use the first person and the active voice without dominating the communication and without sacrificing the objectivity of the research.

The APA Manual also cites the American National Standard for the Preparation of Scientific Papers:

When a verb concerns an author's belief or conjecture, use of the impersonal passive ("it is thought" or "it is suggested") is highly inappropriate. When a verb concerns action by the author, he should use the first person..."

However do not use too many personal pronouns because they are apt to draw attention away from the subject at hand and towards the author.

Personal pronouns include such words as I and you (the two best) he, she, our, and their. We is a personal pronoun and can be used if it is not a "royal we" such as kings of old, and some more modern presidents use instead of I. The royal person was just being a jargon filled pompuss ass when he said "We are greatly displeased with you". What he meant was "I am mad at you". We is perfectly OK if there are coauthors writing the article or you are speaking as a member of a team.

Rudolph Flesch (1974) has developed a formula for measuring interest by using personal words and personal sentences. It is not as well known as his readability formula and the concept is not as widely accepted.

"Personal words" are :

(a) All first-, second-, and third-person pronouns except the neuter pronouns it, its, itself, and they, them, their, theirs, themselves if referring to things rather than people.

(b) All words that have masculine or feminine natural gender, e.g. John Jones, Mary, father, sister, iceman, actress. Do not count common-gender words like teacher, doctor, employee, assistant, spouse.

(c) The group words people (with the plural verb) and folks.

Personal sentences are those sentences aimed directly at the readers. For example, "You should always ...".

Another type of personal sentence are the sentences used in dialogue with direct personal reference. For example, "Sally said..." or "He replied, 'Go to ...'".

Personal words and sentences do not just apply to adult writing they are important in writing to children also. When

sources as diverse as Rudolph Flesch and the APA Manual encourage you to use personal pronouns and personal sentences you should consider it.

Imageability

Imageability refers to the ease in which the reader can visualize the word, phrase or whole passage. Some writers refer to this as concreteness. A number of psychological studies such as those by Paivio (1969) have found that higher imageable words are easier to learn and remember. For example, words would be dog, bulldozer, mother, and low imageable words might be is, philosophy, and of. In the medium range you might find blue, running and under.

You can often improve your sentences by cutting out low imageable words whenever possible. Say, "Make the check to Mr. Jones" not "Make the check in favor of Mr. Jones". Note that 3 very low imageable words collapsed to one. This is also an example of jargon elimination.

Not just words can be ranked for imageability, phrases, sentences and whole passages can be ranked for imageability. Good writers are often adept at finding very vivid examples. Abstract statistics are brought home by a description of a typical person or product which illustrates the mean or modal finding. Writers of childrens science books are often ingenious in illustrating basic principles of physics with familiar situations or home made experiments. Pastors use stories from real life to illustrate the ten commandments and educators attempt to make teaching principles more understandable by citing actual classroom incidents.

Metaphors are an attempt to increase imageability. They often attempt to give a concrete correlary to a concept that is less visual. For example "Her personality began to unfold like a rose. It was a hard tight bud the first day on the island but each morning after the sun arose it opened a bit more until the full flower of womanhood was ^{ca}reveled".

You can improve imageability by adding appropriate pictures, diagrams, maps, and graphs to your manuscript.

Anaphora

One of the things that makes some writing hard to follow is improper use of anaphora or referents. Anaphora or referents are words like pronouns such as it, they, and there. These are words which must refer to something and that something must be clearly understood usually by having just been used in the preceeding sentence.

Writers use referents because they save time, it isn't always necessary to continually repeat the full noun. For example, it is a little awkward to keep repeating The Lord High Executioner when in the next sentence you can say he. When you are obviously talking about a specific baseball game on October 10th you can sometimes just say the game.

However, it is the misuse of anaphora which gets some writers into trouble. Trouble occurs when the referent can refer to two or more things. They might refer to the good guys or the bad guys and it makes a lot of difference. Also a greatly delayed referent can cause a burden on the readers memory and a momentary loss of comprehension or flow of the story. The way out of these difficulties is very simple - just repeat the noun.

Motivation and Subject Matter

One thing readability formulas will never be able to judge is the individual student's motivation to read a particular bit of writing. Some time ago I proposed The Readability Principle which briefly summarized is High motivation overcomes high readability scores. What secondary teacher has not witnessed a teenaged male student with 6th grade reading ability according to nationally standardized tests, master a driver's license manual written at tenth grade readability. However, this same teenager will have great difficulty comprehending his social studies book coupled with a great disinclination to read it for very long.

Writers, if they want to be read, should find topics that are as interesting as possible. If they must write on a difficult topic they should seek examples and applications which are as interesting as possible.

This goes along with the general injunction to know your audience. Write directly to someone. Select the proper level of sophistication then try to write just a little below that level. Best selling novels are written about the 8th grade level according to readability formulas but they are read mostly by high school graduates. The reason is not that novel buyers are semi literate or that they can only read at the 8th grade level, but rather as readability formula makers have said all along - "lower readability scores means that there is an inclination on the part of the reader to continue reading the material." If business executives want their memos read or manufacturers want their instruction manuals read they better learn something from the novelist - keep the readability scores low.

It Can Be Done

Jargon isn't a sometimes problem. It has spread like the bubonic plague across the writing of every field. It is the refuge of the half educated who prefer to cover up ignorance or uncertainty with verbosity. It is the mark of the beginner trying to worm his way into a profession. As a friend in computer science put it "Jargon use is inversely related to true understanding". Readability formulas are effected by jargon so they do help to point up the problem. However we all must attempt to shrink this pervasive disease.

There is ample evidence that proper writing or rewriting can keep the readability of most materials lower than is commonly supposed. I recently had a masters student who rewrote part of the New Jersey Drivers License Manual as part of a masters thesis. When the readability score was lowered 2 grade levels from 8th to 6th grade level, cloze scores jumped up significantly. A surprising finding was that even though the rewritten passages were longer, the students completed the cloze tests in less time indicating that if a passage is easier to read it can be read more rapidly (Hunt 1982).

Another student applied a readability formula to the front page story in the undergraduate student newspaper and to a front page story in the New York Times. He was amazed to find that the undergraduate written story was at the 17th grade level and the New York Times writer wrote at the 11th grade level.

Too many people write like that undergraduate and it simply isn't necessary.

WRITEABILITY CHECKLIST

VOCABULARY

- ☐ Avoid large and/or infrequent words
- ☐ For high frequency words use Carroll list or 3000 Instant Words
- ☐ For meaning list use living word vocabulary
- ☐ Avoid words with Latin and Greek prefixes
- ☐ Avoid jargon
- ☐ OK to use technical words but see rules for introducing new terms

SENTENCES

- ☐ Keep sentences short - on the average
- ☐ For general adults keep average sentence below 15 words
- ☐ Avoid splitting sentence kernel (embedding)
- ☐ Keep verb active (avoid nominalizations)
- ☐ Watch out for too many commas
- ☐ Semicolons and colons may indicate need for new sentence

PARAGRAPHS

- ☐ Keep paragraphs short - on the average
- ☐ One sentence paragraphs permissible at times
- ☐ Indent and line up lists

ORGANIZATION

- ☐ Suit organization plan to topic and your purpose
- ☐ Consider SER - Statement, Example - Restatement
- ☐ Use sub heads
- ☐ Use signal words
- ☐ Use summaries

PERSONAL WORDS

- ☐ Use personal pronouns - but not too many
- ☐ Use personal sentences
- ☐ A direct statement to reader dialogue

IMAGEABILITY

- ☐ Use more high imageable words (concrete)
- ☐ Avoid low imagery words - edit out many
- ☐ Use vivid examples
- ☐ Use metaphors
- ☐ Use graphs whenever appropriate

ANAPHORA

- ☐ Avoid too many anaphora or referents (ex. it)
- ☐ Replace some anaphora with nouns or verbs

ANAPHORA - Continued

- ☐ Avoid distance between noun and anaphora
- ☐ Don't use anaphora which could refer to two or more nouns or verbs

MOTIVATION

- ☐ Select interesting topics
 - ☐ Select interesting examples
 - ☐ Write a level which is a little below your audience.
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